REMARKS

The above amendment and these remarks are responsive to the Office Action, designated FINAL, of 9 Oct 2007 by Examiner David Robertson.

Claims 1, 5-9, 12-15, and 19-32 are in the case, none as yet allowed.

Response to Arguments

a. In responding to applicant's arguments in the prior Amendment, the Examiner states (Office Action, page 2, paragraph 4.a.) "... Grenchus was not used alone... Fields was used to teach determining staffing requirements and productivity requirements for a demanufacturing enterprise."

With respect to Fields, applicant responds by pointing out that the term "demanufacturing" does not appear at all in the Fields reference. On the contrary, Fields, at column 1, line 15, specifies "...managing retail locations...". Applicant asserts that there is quite a difference between planning workload for a retail enterprise that has quantifiable and repeatable retail merchandise (shirts, pants, etc.) for sale as distinguished from applicant's invention for planning the disassembly of complex

mechanical, electronic devices. Such devices have various types of fasteners and require a variety of tools to disassemble, can be disassembled in numerous operator independent sequences or steps (as distinguished form manufacturing that requires machines to be assembled in a given sequence), is affected by down stream recycler capabilities and processes (how for a machine is disassembled is influenced by the required purity of the commodity being recycles) and by customer specific requirements (a certain component must be impaired or can not be reused, or the commodity materials must be incinerated instead of being recycled), is affected by the commodity recovery market (for instance, if the cost for virgin plastic resin is low, the demand for plastic recyclate material is low as well, and this could alter the level of disassembly required.)

Further with respect to Fields, applicant's invention plans and projects workload over a month or year, for example, whereas Fields plans or schedules workload daily. See Fields abstract, which states "...create a schedule for a given day...", "...tasks to be performed on that day...", and column 36, line 61 "...daily business volume..." It would be impossible to precisely staff or plan a demanufacturing facility on a daily projection as used in retail sales planning - for if the workload is changed daily, one could never keep a reasonably stable staff in a demanufacturing facility.

Applicant requests that this response of the Examiner be reconsidered and withdrawn.

b. The Examiner states "Grenchus teaches a demanufacturing enterprise serving more than one customer (Grenchus, III. 2nd paragraph at "customers are not always able to give definitive information about shipments), and Fields in teaching workload planning for manufacturing for multiple customer's orders." [Office Action, page 3, paragraph b.]

Applicant notes, as explained above, that Fields nowhere uses the term "manufacturing", and certainly does not teach "demanufacturing". Further, the reference cited in Fields (column 2, lines 17-27) does not teach planning for manufacturing or demanufacturing for multiple customer orders.

The distinction between applicant's invention and Grenchus is that the original Grenchus Section III, 2nd paragraph focuses on an individual customer. Specifically, the first sentence says "...contact with the customer to obtain an outlook.". "Customer" is a single entity. Consequently, applicant asserts, the Examiner is taking Grenchus out of context. The Grenchus teaching, particularly at the paragraph cited by the Examiner, relates to creating a tracking mechanism for incoming customer shipments, and does not related to workload planning.

Applicant requests that this response of the Examiner be reconsidered and withdrawn.

c. The Examiner broadly interprets the phrase "determining a complexity factor for each customer" in applicant's claims as "...determining for each customer which of

two product categories applies, small machines or medium to large machines; i.e., the complexity factor for the customer is determined by the size of the computer equipment."

The Examiner notes that "unique" complexity factor is not claimed. Applicant has amended the claim to make this express. Support for the concept of "unique complexity factor" is found in applicant's specification at page 10, line 13 and page 7, line 23 to page 8, line 3.

Applicant reasserts that Grenchus does not teach a unique complexity factor for each customer. In Grenchus, an incoming shipment (truckload) was unloaded, machines were segregated and staged into different holding areas based on what disassembly techniques would be required, and not by a customer code. In Grenchus, page 158, the second sentence of Section V indicates that staging of personal computers were batched (typically as desk top CPU's or labtops or PC printers, etc.) to create "longer runs of similar equipment into the area." The first sentence of the second paragraph in Section V indicates that the medium to large machines (non-PC type of equipment) were staged by machine type and model. A better way to describe a medium machine would be mid range server, and a large machine as a high end server. Within the industry, servers are typically described as low end servers (single, personal use machines such as laptops and desk tops with limited function and memory) to high end servers (high function, large memory machines that service multiple users in a commercial enterprise environment). Thus, applicant respectfully traverses the Examiner's assertion that complexity factor for the customer is

determined by the size of the computer equipment. Grenchus page 158 states "Due to different product complexity, items are routed to two areas for dismantle; the manual disassembly cell or a disassembly line." It does not state nor imply a customer unique or customer specific complexity factor, as set forth in applicant's claims.

Applicant's invention determines complexity factors based on factors including ease of disassembly, salvageable content, the actions required to prevent the salvageable material from being damaged, and the actions required for the proper storage of salvageable material.

Applicant requests that this response of the Examiner be reconsidered and withdrawn.

d. The Examiner notes that Grenchus is not used to teach that all demanufacturing problems were solved.

Applicant agrees.

e. The Examiner asserts that Suzuki teaches "known methods of converting demanufacturing complexity and volume to processing time and resources".

Suzuki does use dimension and weight in order to determine complexity of a manufactured article (singular). As stated above, applicant's invention determines complexity factors based on ease of disassembly, salvageable content, the actions required to prevent the salvageable material from being damaged and the actions required for the proper storage of salvageable material. However, since IT

equipment consists individually of interrelated parts and because a customer may have a variety of IT equipment being returned for disposal, applicant's model takes multiple elements into consideration when determining a complexity factor for a customer. On the other hand, Suzuki does not take other customer specific requirements into consideration. For instance, although certain separation procedures may exist or are known to efficiently recover, recycle, dispose of returned products based on material content when the product was manufactured as identified by Suzuki, it is not uncommon for customers (post manufacturing) to impose new or changed restrictions that negate Suzuki's simple recovery process of scanning a piece of information that was applied to the article at manufacturing. It is these new restrictions that are identified as included within critical operations in applicant's amended claims. For example, when a functional hard drive is removed from a server, it typically can have its data erased and be reused. If it is not functional, it can be further disassembled for commodity recovery. However, due to sensitivity of the data that may have been stored on the hard drive, customers can override a simple reuse or material recovery scheme and demand that the hard drive be impaired and incinerated. As is shown in Figure 3, applicant's invention takes this into account when the customer representative interacts with the several customers to identify any additional disposal needs and is related to the engineer for assessment in the disassembly prototyping process.

g. The Examiner asserts that "Grenchus in view of Suzuki... suggests that such non-financial factors were

critical to reducing risk of liability and meeting regulations for harmful or hazardous materials.

Applicants traverse the conclusion that Grenchus and Suzuki suggest that nonfinancial factors were critical to reducing risk of liability and meeting regulations for the demanufacturing processing of harmful or hazardous material. Such a teaching is not found in Grenchus, pages 157 through 160, and Suzuki does not take customer specific requirements into consideration, as applicant's claims require.

Claim Objections

The Examiner has objected to claims 14 and 32 as being informal. Applicant has amended the claims as suggested the Examiner.

Claim Rejections - 35 U.S.C. 112, First Paragraph

Claims 1, 3-15, and 19-32 have been rejected under 35 U.S.C. 112, first paragraph, for use of the phrase "critical factors".

Applicants have canceled claims 2-4, 10-11, and 16-18.

With respect to claims 1, 19, and 32, applicant intends the use of the phrase "critical factors" to mean "critical operations", as those are described in the Specification, as follows:

"...In step 20, the enterprise interfaces with each of its customers to obtain equipment or materials disposal or processing needs and forecasts." (Specification, page 8, lines 9-11.) "Such processing needs and forecasts may include critical operations. Examples of critical operations may be: removal of sensitive parts to prevent disclosure of confidential or trade secret information, recovery of parts needed to satisfy a shortage requirement (usually temporary) for build of other products, removal of parts to prevent their re-use, removal of parts or materials as required by a vendor commodity purchaser..." (Material added in the previous amendment to Specification at page 8 after line 11 from Grenchus, et al. U.S. Patent 7,054,824.)

In order to clarify this aspect of the invention, applicant has amended claims 1, 19, and 32 to incorporate the above material, and to refer to critical operations.

Further with respect to claims 1, 19, and 32, in which applicant recites "utilizing periodic updates...to adjust complexity factors", the Examiner states that such is not supported by the specification. Applicant calls to the attention of the Examiner the following material from the specification, at pages 7 and 8, highlighted to show how the complexity factors, which include critical operations, are periodically updated:

"In accordance with a preferred embodiment of the invention, process requirements (including staffing, capital equipment, and so forth) for a demanufacturing enterprise are defined by <u>determining for each customer</u>

a projected work content and dismantle complexity factor."

"In accordance with a preferred embodiment of the invention, a demanufacturing workload model is used for monthly planning and in the early planning process. Model outputs include (1) documentation of monthly incoming items for demanufacturing and salvage (D&S) by customer; (2) manpower forecast by various categories (i.e., machines, parts, etc.) by month; (3) productivity targets and actual productivity tracked against those targets; and (4) projected pounds received and dismantled by customer by month. This model is updated and distributed periodically, such as monthly) according to the following process. (1) A customers representative provides monthly projections as in put to the model. These projections are obtained through discussions with the customer or analysis of past history, and may be for some period, such as a year, into the future. (2) Data received from the customer representative is input to the model, and (3) a report is generated and distributed to process engineers, planning personnel, and management. In general, the intent of each periodic update is to provide a reasonably accurate outlook of the workload for the current month and an estimate for the rest of the year. Manpower and pound processed projections are used to calculate productivity targets."

"This model may be implemented as, for example, a Lotus 1-2-3 spreadsheet, which facilitates periodic revision. Data regarding actual returns received, work

processed, and staffing is collected on a monthly basis, distributed prior to the model update, and used to aid in the projection of future volumes and workload/staffing. Staffing requirements are unique for each customer and are based on the number of pounds needed to be worked during each month and the associated complexity (work content multiplier) for that customer's returns. Once a year, or as required, a meeting may be held with the appropriate production and engineers to revisit and revise the work content criteria used in the model."

From this, it is apparent that complexity (read, complexity factor) is unique for each customer and is periodically revised.

With respect to claim 12, the Examiner states that the specification does not support a complexity factor adjusted based on "the volume, factors, and shipment experience." [Office Action, page 7.] The Examiner is correct. However, this is not what claim 12 recites. Claim 12 recites "...periodically updating said workload planning model based upon actual and anticipated changes in quantity projections and complexity factors." This does not say that the complexity factor is adjusted based on volume..., but rather that the "workload planning model" is updated based upon "quantity projections and complexity factors".

Further with respect to claims 1, 19, and 32, the Examiner states the Specification does not support determining staffing requirements for a "plurality of future periods." Applicant traverses.

Applicant's specification states "...a demanufacturing workload model is used for monthly planning..." and "Staffing requirements are unique for each customer and are based on the number of pounds needed to be worked during each month and the associated complexity (work content multiplier) for that customer's returns." [Specification, pages 7 and 8.]

It is apparent that staffing requirements are projected on, for example, a monthly (that is, periodic) basis.

With respect to claim 14, the Examiner finds that the Specification does not support "plurality of future checkpoints..." However, the specification does support monthly planning and the summation of customer requirements "for a given time period." Applicant has amended claim 14 in accordance with the teachings of the specification (page 10, line 6.)

Applicant requests that the rejection of claims 1, 5-9, 12-15, and 19-32 under 35 U.S.C. 112, First Paragraph, be withdrawn in view of the above remarks and amendments to the claims.

Claim Rejections - 35 U.S.C. 112, Second Paragraph

Claims 1, 3-15, and 19-32 have been rejected under 35 U.S.C. 112, Second Paragraph. The Examiner refers to such phrases as "regardless of any..." (claims 1, 14, 19, 32), "of any other factors" (claims 1, 14, 19, 32), "preclude any future..." (claims 1, 14, 19, 32), and "plurality of future

checkpoints" (claim 14).

Applicant has canceled claims 3-4, and 10-11.

Applicant has amended each of the other referenced claims to remove or clarify the phrases to which the Examiner objects.

Claim Rejections - 35 USC 103

11. Claims 1, 3-5, 7, 8, 14, and 15, and also claims 19-23, 25, and 26, have been rejected under 35 U.S.C. 103(a) over Grenches et al. ("Demanufacturing of Information Technology Equipment", in Proceedings of the 1997 IEEE International Symposium on Electronics and the Environment, 1997, pgs. 157-160) in view of Fields et al. (U.S. Patent 5,111,391) and further in view of Suzuki et al. (U.S. Patent 6,226,617).

Applicants have amended independent claims 1, 14, and 19 and thereby claims (5, 7, 8, 15, 22-23, 25, and 26) which depend from them, and has previously discussed these references above in reply to the Examiner's Response.

With respect to independent claims 1, 14, 19, and claims 5, 7, 8, 15, 22-23, 25, and 26 depending therefrom, whereas applicants' invention describes a process or model for planning workload in a demanufacturing operation, the Grenchus article describes a physical and operational setup and disassembly sequence. Grenchus indicates that to obtain an outlook (forecast) of incoming material, contact is made

with a single customer to obtain a single outlook to estimate the amount, type and timing of the single shipment (page 2, section III, Customer Shipment, paragraph 1). In Grenchus there is no teaching that the information will be used in workload planning for a demanufacturing facility nor that any historical data or experience will be incorporated into the workload planning process by summing the workload requirements of a plurality of customers, adjusted as claimed.

The Examiner asserts that during the period 1997 to 2001 there appeared renewed research interest in product disposal and recovery technologies, and references Sandborn and Murphy and Lee and Ishii as evidence. Applicants reply that these references show that the problems associated with workload planning in a demanufacturing facility were either not yet understood or not yet solved prior to applicant's invention.

For example: Sandborn and Murphy, 2nd paragraph, states "Waste is typically the least characterized of the mmetrics presented in the model...all waste was lumped together... it would be desirable to categorize the different types of waste... Development of more detailed data modules and/or predictive modules for electronic components will be critical..."

The Lee and Ishii paper, at page 24, first paragraph says "This paper introduced the recyclability map as a new graphical design tool for the early identification of product subassemblies where appropriate material selection and disassembly redesigns can increase material recovery

efficiency and reduce retirement costs." The third paragraph states "The utility of the recyclability map is its construction... trade-off analysis and design review tool." There is nothing in these papers that suggest workload planning. Further, at page 20, Table 1, there is nothing that relates to complexity based on customer complexity factors or product complexity factors such as low end servers, high end servers, et. The last paragraph in first column at page 19 says "...the product recycling and retirement process appears highly uncertain and variable." Also, second column, 1st paragraph states "Current DFE methods fall short in accounting for these and other external uncontrollable factors." Thus, workload planning in a demanufacturing facility as set forth in applicant's claims was not well known.

On the other hand, applicants' invention describes a method for a workload projection model for a demanufacturing enterprise which has many customers (page 10, lines 12-14; page 11, lines 19-21), each with unique requirements (including critical operations). Applicants' invention also teaches how a customer representative establishes a plan for future shipments with each customer, utilizes monthly updates, prior customer product shipment experience and/or new demanufacturing product prototyping to establish and adjust complexity factors that are used in a model to project workload (page 7, lines 5-17; page 11, line 22 to page 13, line 2). Additionally, the invention not only provides an outlook for the month but also an estimate for the rest of the year (page 12, lines 18-21).

Further with respect to Grenchus, Section V, Staging,

paragraphs 1 and 2 imply that the customer product input has only two product categories (complexities): small machines (PC's and desktops) and medium or large machines. On the other hand, applicants' invention describes an unique complexity factor determined for each customer based on critical operations and resulting from prototype dismantling, or modeling, updated by experience, and that is used in the workload planning process -- this also allows an increased level of granularity or specificity to be assigned to each customer which improves planning accuracy (page 3, lines 12-13; page 6, lines 16-17; page 10, lines 10-14).

Further with respect to Grenchus, Section IX, Challenges and Actions, in paragraph 1 states that "Aside from the daily changes in product mix, new personnel... some common issues are:..." This implies that planning problems still existed at the time of the writing of the paper. Applicants' invention provides a workload projection model that accommodates such changes and daily production flux. Also, in the same Section IX, order of disassembly and level of tear down are also identified as challenges. Applicants' invention provides that expected work content and resulting items (saleable items, commodities, trash, etc.) for each customer are determined by dismantling machines as prototypes, obtaining associated work content and using that information in an overall workload projection and planning process (page 8, lines 12-20).

With respect to Fields, Fields describes a scheduling model which assumes that staff and quantity of resources needed have already been determined and known to be available for the scheduling of a series of tasks (column 2,

lines 21 and 22). On the other hand, applicants' invention provides a planning model that actually projects the quantity and staff resources needed in the first place (page 12, line 18 to page 13, line 2).

With respect to Suzuki, Suzuki teaches that information for treatment is affixed to the individual article so that proper and appropriate treatment can be executed (Col. 2, lines 15-18; Col. 7, lines 11-12). As distinguished from determining treatment methods based on data affixed to each individual machine returned for end of life processing (as in Suzuki), applicants' invention determines a work content and associated complexity factor for each customer (whose input may contain a variety of products). Further, it is expected that not all producers or manufacturers will utilize the Suzuki process of affixing data to each individual machine, and therefore some other planning methods will be needed to project workload, and these are not taught by Suzuki.

Further with respect to Suzuki, Suzuki indicates (Col. 3, lines 2-4) that ultimately the entire selection process for a treatment is determined which is lowest in regards to the overall operating cost. Also, Suzuki indicates (Col. 3, lines 9-12) that operating cost, and hence the time estimation for treatment, is determined on the basis of dimension or weight of the article. On the other hand, aside from lowest cost demanufacturing, applicants' invention provides customers the ability to prescribe specific requirements or work content (page 8, lines 9-11; page 10, lines 10-14; page 11, line 19 to page 12, line 1). Such specific requirements may include specific asset

protection requirements or destruction or impairment techniques, regardless of any financial benefit or cost. These types of customer requests are demanded by customers to preclude secondary channel sales, ensure data security and privacy, and therefore have to be accommodated in any workload planning model. Therefore, applicants' invention does not use only cost to determine the treatment selection process, but offers flexibility to address other specific customer requests and factors (that is, critical operations) to determine the best treatment option to be used in the workload planning model. (These critical operations are described in Grenchus, et al. U.S. Patent 7,054,824 at Col. 5, lines 1-16; U.S. patent application Serial No. 09/524,366, entitled "Method of Demanufacturing a Product" by E. J. Grenchus, et al., incorporated by reference in the present application at page 1, lines 5-10, and page 8, lines 12-20, and incorporated in the specification of the present application by this amendment.)

With respect to the combination of Grenchus, Fields, and Suzuki, applicants have discussed above significant distinctions with respect to the amended claims. None of these references, or their combination, teaches, for example, a workload planning process based upon the summation of results for a plurality of customers, with volume, critical factors, and complexity defined for each customer and projected into the future at a plurality of checkpoints for workload and staffing planning.

Applicants request that claims 1, 5, 7, 8, 14, and 15, and also claims 19-23, 25, and 26, be allowed.

9. Claims 6 and 24 have been rejected under 35 U.S.C. 103(a) over Grenchus, in view of Fields, and further in view of Suzuki, and further in view of Lee and Ishii ("Demanufacturing Complexity Metrics in Design for Recyclability" in Proceedings of the 1997 IEEE International Symposium on Electronics and the Environment, 1997, pgs. 19-24).

Claims 6 and 24 depend from base claims 1 and 19, respectively, and are distinguished from Grenches, Fields, and Suzuki as previously described.

Lee and Ishii is cited in combination with Grenches, Fields and Suzuki for teaching accumulating historical data for determining complexity factor leading to better designs, lower complexity factor, and lower overall cost of demanufacturing. However, Lee and Ishii in this combination does not provided additional teachings which together with Grenches, Fields, and Suzuki teach applicants claimed invention, including a workload planning process for a demanufacturing facility based upon the summation of results for a plurality of customers, with volume, critical factors, and complexity, including critical operations, defined for each customer, modeled, and projected into future sequential periods (such as months) for workload and staffing planning.

Applicants request that claims 6 and 24 be allowed.

10. Claims 9-13 and 27-32 have been rejected under 35 U.S.C. 103(a) over Grenchus, in view of Fields, and further in view of Suzuki, and further in view of Yuri et al. (U.S. Patent 6,249,715).

Applicant has canceled claims 10-11.

Claims 9, and 12-13 depend from base claim 1, claims 27 and 28 from base claim 19. Claim 32 has been amended as previously described with respect to claims 1, 14, and 19. Without specifying the specific teaching, Yuri is cited generally as teaching optimizing work distribution according to time variation factors based on complexity and the skill level of the workforce. However, even in combination with Grechus, Fields, and Suzuki, Yuri does not teach a workload planning process for a demanufacturing facility based upon the summation of results for a plurality of customers, with volume, and complexity including critical operations defined for each customer and projected into a plurality of future periods for workload and staffing planning.

Applicants traverse the suggestion that resource planning in a manufacturing process can be applied to a demanufacturing process. The problems are significantly different, for in a manufacturing process the process steps are predefined and understood based on product design. On the other hand, in a demanufacturing process, customer requirements (critical operations) must be taken into account and accumulated for all customers in preparing the resource plan. Applicant is the first to recognize and provide a solution to this aspect of demanufacturing processes.

Applicants request that claims 9, 12-13, and 27-32 be allowed.

SUMMARY AND CONCLUSION

Applicants urge that the above amendments be entered and the case passed to issue with claims 1, 5-9, 12-15, and 19-32.

The Application is believed to be in condition for allowance and such action by the Examiner is urged. Should differences remain, however, which do not place one/more of the remaining claims in condition for allowance, the Examiner is requested to phone the undersigned at the number provided below for the purpose of providing constructive assistance and suggestions in order that allowable claims can be presented, thereby placing the Application in condition for allowance without further proceedings being necessary.

Sincerely,

Edward J.Grenchus, Jr. et al.

By

Shelley M Beckstrand
Reg. No. 24,886

Date: 9 Jan 2008

Shelley M Beckstrand, P.C.
Patent Attorney
61 Glenmont Road
Woodlawn, VA 24381-1341

Phone: (276) 238-1972
Fax: (276) 238-1545